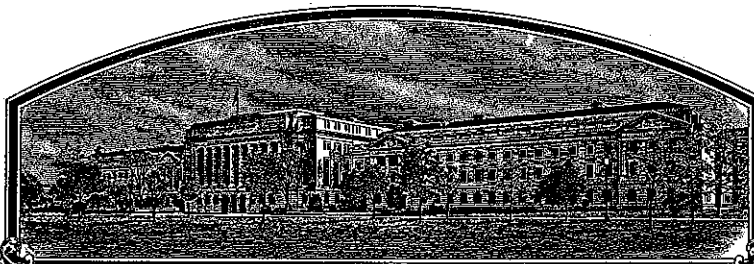


No.

200300305



# THE UNITED STATES OF AMERICA

TO ALL TO WHOM THESE PRESENTS SHALL COME:  
University of Georgia Research Foundation, Inc. and  
Grosslanz Technology Limited

Whereas, THERE HAS BEEN PRESENTED TO THE  
Secretary of Agriculture

AN APPLICATION REQUESTING A CERTIFICATE OF PROTECTION FOR AN ALLEGED DISTINCT VARIETY OF SEXUALLY REPRODUCED, OR TUBER PROPAGATED PLANT, THE NAME AND DESCRIPTION OF WHICH ARE CONTAINED IN THE APPLICATION AND EXHIBITS, A COPY OF WHICH IS HEREUNTO ANNEXED AND MADE A PART HEREOF, AND THE VARIOUS REQUIREMENTS OF LAW IN SUCH CASES MADE AND PROVIDED HAVE BEEN COMPLIED WITH, AND THE TITLE THERETO IS FROM THE RECORDS OF THE PLANT VARIETY PROTECTION OFFICE, IN THE APPLICANT(S) INDICATED IN THE SAID COPY, AND WHEREAS, UPON DUE EXAMINATION MADE, THE SAID APPLICANT(S) IS (ARE) ADJUDGED TO BE ENTITLED TO A CERTIFICATE OF PLANT VARIETY PROTECTION UNDER THE LAW,

AND WHEREFORE THIS CERTIFICATE OF PLANT VARIETY PROTECTION IS TO GRANT UNTO THE SAID APPLICANT(S) AND THE SUCCESSORS, HEIRS OR ASSIGNS OF THE SAID APPLICANT(S) FOR THE TERM OF TWENTY YEARS FROM THE DATE OF THIS GRANT, SUBJECT TO THE PAYMENT OF THE REQUIRED FEES AND PERIODIC DEPOSIT OF VIABLE BASIC SEED OF THE VARIETY IN A PUBLIC REPOSITORY AS PROVIDED BY LAW, THE APPLICANT(S) BEING OTHERWISE FROM SELLING THE VARIETY, OR OFFERING IT FOR SALE, OR REPRODUCING IT, OR IMPORTING IT, OR EXPORTING IT, OR CONDITIONING IT FOR PROPAGATION, OR STOCKING IT FOR ANY OF THE PURPOSES OF USING IT IN PRODUCING A HYBRID OR DIFFERENT VARIETY THEREFROM, TO THE EXTENT PROVIDED IN THE PLANT VARIETY PROTECTION ACT. (84 STAT. 1542, AS AMENDED, 7 U.S.C. 2321 ET SEQ.)

CLOVER, WHITE

'DURANA'

In Testimony Whereof, I have hereunto set my hand and caused the seal of the Plant Variety Protection Office to be affixed at the City of Washington, D.C. this seventh day of December, in the year two thousand and seven.

Attest:

Commissioner  
Plant Variety Protection Office  
Agricultural Marketing Service

Secretary of Agriculture

U.S. DEPARTMENT OF AGRICULTURE  
AGRICULTURAL MARKETING SERVICE  
SCIENCE AND TECHNOLOGY - PLANT VARIETY PROTECTION OFFICE

APPLICATION FOR PLANT VARIETY PROTECTION CERTIFICATE  
(Instructions and information collection burden statement on reverse)

The following statements are made in accordance with the Privacy Act of 1974 (5 U.S.C. 552a) and the Paperwork Reduction Act (PRA) of 1995.

Application is required in order to determine if a plant variety protection certificate is to be issued (7 U.S.C. 2421). Information is held confidential until certificate is issued (7 U.S.C. 2426).

1. NAME OF OWNER University of Georgia Research Foundation, Inc. (UGARF) and AgResearch Limited, New Zealand (AgRes) <del>Grassland Technology Limited</del>		2. TEMPORARY DESIGNATION OR EXPERIMENTAL NAME GA-43, GC90	3. VARIETY NAME Durana
4. ADDRESS (Street and No., or R.F.D. No., City, State, and ZIP Code, and Country) Room 630 Graduate Studies Bldg. University of Georgia Athens, GA 30602		5. TELEPHONE (include area code) 706-542-5942	FOR OFFICIAL USE ONLY PVPO NUMBER <b>2003 003 05</b> FILING DATE <b>08/05/2003</b> <b>AAA</b>
		6. FAX (include area code) 706-542-3837	
7. IF THE OWNER NAMED IS NOT A "PERSON", GIVE FORM OF ORGANIZATION (corporation, partnership, association, etc.) Corporation	8. IF INCORPORATED, GIVE STATE OF INCORPORATION Georgia	9. DATE OF INCORPORATION Nov. 17, 1978	
10. NAME AND ADDRESS OF OWNER REPRESENTATIVE(S) TO SERVE IN THIS APPLICATION. (First person listed will receive all papers) John Ingle University of Georgia Research Foundation, Inc. Room 630 Graduate Studies Research Center University of Georgia Athens, GA 30602			FILING AND EXAMINATION FEES: \$ <b>3652.00</b> DATE <b>8/05/2003</b> CERTIFICATION FEE: \$ <b>768.00</b> DATE <b>10/03/2007</b>
11. TELEPHONE (include area code) 706-542-5942	12. FAX (include area code) 706-542-3837	13. E-MAIL ji@ovpr.uga.edu	14. CROP KIND (Common Name) White Clover
15. GENUS AND SPECIES NAME OF CROP Trifolium repens L.		16. FAMILY NAME (Botanical) Fabaceae	17. IS THE VARIETY A FIRST GENERATION HYBRID? <input type="checkbox"/> YES <input checked="" type="checkbox"/> NO
18. CHECK APPROPRIATE BOX FOR EACH ATTACHMENT SUBMITTED (Follow instructions on reverse) a. <input checked="" type="checkbox"/> Exhibit A. Origin and Breeding History of the Variety b. <input checked="" type="checkbox"/> Exhibit B. Statement of Distinctness c. <input checked="" type="checkbox"/> Exhibit C. Objective Description of Variety d. <input checked="" type="checkbox"/> Exhibit D. Additional Description of the Variety (Optional) e. <input checked="" type="checkbox"/> Exhibit E. Statement of the Basis of the Owner's Ownership f. <input checked="" type="checkbox"/> Voucher Sample (2,500 viable untreated seeds or, for tuber propagated varieties, verification that tissue culture will be deposited and maintained in an approved public repository) g. <input checked="" type="checkbox"/> Filing and Examination Fee (\$3,652), made payable to "Treasurer of the United States" (Mail to the Plant Variety Protection Office)		19. DOES THE OWNER SPECIFY THAT SEED OF THIS VARIETY BE SOLD AS A CLASS OF CERTIFIED SEED? See Section 83(a) of the Plant Variety Protection Act <input type="checkbox"/> YES (If "yes", answer items 20 and 21 below) <input checked="" type="checkbox"/> NO (If "no", go to item 22) 20. DOES THE OWNER SPECIFY THAT SEED OF THIS VARIETY BE LIMITED AS TO NUMBER OF CLASSES? <input type="checkbox"/> YES <input type="checkbox"/> NO IF YES, WHICH CLASSES? <input type="checkbox"/> FOUNDATION <input type="checkbox"/> REGISTERED <input type="checkbox"/> CERTIFIED 21. DOES THE OWNER SPECIFY THAT SEED OF THIS VARIETY BE LIMITED AS TO NUMBER OF GENERATIONS? <input type="checkbox"/> YES <input type="checkbox"/> NO IF YES, SPECIFY THE NUMBER 1,2,3, etc. FOR EACH CLASS. <input type="checkbox"/> FOUNDATION <input type="checkbox"/> REGISTERED <input type="checkbox"/> CERTIFIED (If additional explanation is necessary, please use the space indicated on the reverse.)	
22. HAS THE VARIETY (INCLUDING ANY HARVESTED MATERIAL) OR A HYBRID PRODUCED FROM THIS VARIETY BEEN SOLD, DISPOSED OF, TRANSFERRED, OR USED IN THE U. S. OR OTHER COUNTRIES? <input checked="" type="checkbox"/> YES <input type="checkbox"/> NO IF YES, YOU MUST PROVIDE THE DATE OF FIRST SALE, DISPOSITION, TRANSFER, OR USE FOR EACH COUNTRY AND THE CIRCUMSTANCES. (Please use space indicated on reverse.)		23. IS THE VARIETY OR ANY COMPONENT OF THE VARIETY PROTECTED BY INTELLECTUAL PROPERTY RIGHT (PLANT BREEDER'S RIGHT OR PATENT)? <input checked="" type="checkbox"/> YES <input type="checkbox"/> NO IF YES, PLEASE GIVE COUNTRY, DATE OF FILING OR ISSUANCE AND ASSIGNED REFERENCE NUMBER. (Please use space indicated on reverse.)	
24. The owners declare that a viable sample of basic seed of the variety has been furnished with application and will be replenished upon request in accordance with such regulations as may be applicable, or for a tuber propagated variety a tissue culture will be deposited in a public repository and maintained for the duration of the certificate. The undersigned owner(s) is(are) the owner of this sexually reproduced or tuber propagated plant variety, and believe(s) that the variety is new, distinct, uniform, and stable as required in Section 42, and is entitled to protection under the provisions of Section 42 of the Plant Variety Protection Act. Owner(s) is(are) informed that false representation herein can jeopardize protection and result in penalties.			

SIGNATURE OF OWNER



NAME (Please print or type)

Gordhan L. Patel

SIGNATURE OF OWNER

NAME (Please print or type)

CAPACITY OR TITLE

Executive Vice President

DATE

7-28-03

CAPACITY OR TITLE

DATE

**GENERAL:** To be effectively filed with the Plant Variety Protection Office (PVPO), ALL of the following items must be received in the PVPO: (1) Completed application form signed by the owner; (2) completed exhibits A, B, C, E; (3) for a seed reproduced variety at least 2,500 viable untreated seeds, for a hybrid variety at least 2,500 untreated seeds of each line necessary to reproduce the variety, or for tuber reproduced varieties verification that a viable (in the sense that it will reproduce an entire plant) tissue culture will be deposited and maintained in an approved public repository; (4) check drawn on a U.S. bank for \$3,652 (\$432 filing fee and \$3,220 examination fee), payable to "Treasurer of the United States" (See Section 97.6 of the Regulations and Rules of Practice.) Partial applications will be held in the PVPO for not more than 90 days, then returned to the applicant as unfilled. Mail application and other requirements to Plant Variety Protection Office, AMS, USDA, Room 401, NAL Building, 10301 Baltimore Avenue, Beltsville, MD 20705-2351. Retain one copy for your files. All items on the face of the application are self explanatory unless noted below. Corrections on the application form and exhibits must be initialed and dated. **DO NOT** use masking materials to make corrections. If a certificate is allowed, you will be requested to send a check payable to "Treasurer of the United States" in the amount of \$432 for issuance of the certificate. Certificates will be issued to owner, not licensee or agent.

## Plant Variety Protection Office

Telephone: (301) 504-5518

FAX: (301) 504-5291

Homepage: <http://www.ams.usda.gov/science/pvpo/pvp.htm>

2003 00305

## ITEM

- 18a. Give: (1) the genealogy, including public and commercial varieties, lines, or clones used, and the breeding method;  
(2) the details of subsequent stages of selection and multiplication;  
(3) evidence of uniformity and stability; and  
(4) the type and frequency of variants during reproduction and multiplication and state how these variants may be identified
- 18b. Give a summary of the variety's distinctness. Clearly state how this application variety may be distinguished from all other varieties in the same crop. If the new variety is most similar to one variety or a group of related varieties:  
(1) identify these varieties and state all differences objectively;  
(2) attach statistical data for characters expressed numerically and demonstrate that these are clear differences; and  
(3) submit, if helpful, seed and plant specimens or photographs (prints) of seed and plant comparisons which clearly indicate distinctness.
- 18c. Exhibit C forms are available from the PVPO Office for most crops; specify crop kind. Fill in Exhibit C (Objective Description of Variety) form as completely as possible to describe your variety.
- 18d. Optional additional characteristics and/or photographs. Describe any additional characteristics that cannot be accurately conveyed in Exhibit C. Use comparative varieties as is necessary to reveal more accurately the characteristics that are difficult to describe, such as plant habit, plant color, disease resistance, etc.
- 18e. Section 52(5) of the Act requires applicants to furnish a statement of the basis of the applicant's ownership. An Exhibit E form is available from the PVPO.
19. If "Yes" is specified (*seed of this variety be sold by variety name only, as a class of certified seed*), the applicant **MAY NOT** reverse this affirmative decision after the variety has been sold and so labeled, the decision published, or the certificate issued. However, if "No" has been specified, the applicant may change the choice. (See Regulations and Rules of Practice, Section 97.103).
22. See Sections 41, 42, and 43 of the Act and Section 97.5 of the regulations for eligibility requirements.
23. See Section 55 of the Act for instructions on claiming the benefit of an earlier filing date.

**21. CONTINUED FROM FRONT** (Please provide a statement as to the limitation and sequence of generations that may be certified.)

**22. CONTINUED FROM FRONT** (Please provide the date of first sale, disposition, transfer, or use for each country and the circumstances, if the variety (including any harvested material) or a hybrid produced from this variety has been sold, disposed of, transferred, or used in the U.S. or other countries.)

Date of first sale: 5 October 2002 by Pennington Seed, Madison, GA

**23. CONTINUED FROM FRONT** (Please give the country, date of filing or issuance, and assigned reference number, if the variety or any component of the variety is protected by intellectual property right (Plant Breeder's Right or Patent).)

New Zealand, 19 March 2002, NZ application #CL0038

**NOTES:** It is the responsibility of the applicant/owner to keep the PVPO informed of any changes of address or change of ownership or assignment or owner's representative during the life of the application/certificate. There is no charge for filing a change of address. The fee for filing a change of ownership or assignment or any modification of owner's name is specified in Section 97.175 of the regulations. (See Section 101 of the Act, and Sections 97.130, 97.131, 97.175(h) of the Regulations and Rules of Practice.)

To avoid conflict with other variety names in use, the applicant must check the appropriate recognized authority. For example, for agricultural and vegetable crops, contact: Seed Branch, AMS, USDA, Room 213, Building 306, Beltsville Agricultural Research Center-East, Beltsville, MD 20705.

Telephone: (301) 504-8089. <http://www.ams.usda.gov/lsg/seed.htm>

According to the Paperwork Reduction Act of 1995, an agency may not conduct or sponsor, and a person is not required to respond to a collection of information unless it displays a valid OMB control number. The valid OMB control number for this information collection is 0581-0055. The time required to complete this information collection is estimated to average 3.0 hours per response, including the time for reviewing instructions, searching existing data sources, gathering and maintaining the data needed, and completing and reviewing the collection of information.

The U.S. Department of Agriculture (USDA) prohibits discrimination in all its programs and activities on the basis of race, color, national origin, gender, religion, age, disability, sexual orientation, marital or family status, political beliefs, parental status, or protected genetic information. (Not all prohibited bases apply to all programs.) Persons with disabilities who require alternative means for communication of program information (Braille, large print, audiotope, etc.) should contact USDA's TARGET Center at 202-720-2600 (voice and TDD).

To file a complaint of discrimination, write USDA, Director, Office of Civil Rights, Room 326-W, Whitten Building, 14th and Independence Avenue, SW, Washington, DC 20250-9410 or call 202-720-5964 (voice and TDD). USDA is an equal opportunity provider and employer.

ST-470 (02-10-2003) designed by the Plant Variety Protection Office with Word 2000. Replaces former versions of ST-470, which are obsolete.

**WHITE CLOVER**  
**'Durana'**

**18A. Origin and Breeding History of the Variety**

'Durana' is an 84 parent synthetic variety tracing to one hundred, ninety-two (192) naturalized ecotypes collected in September 1992 from perennial grass pastures near Eatonton, GA (latitude 33° 25' 02.47" North; longitude 83° 28' 36.24" West). The parentage of these ecotypes is unknown, but all were found to be exclusively stolon dense, intermediate leaf types (*T. repens* f. *hollandicum* Erith ex Jav. & Soo) as defined by Fick and Luckow (1991). As intermediate types, they may have actually come in with early settlers from Europe (late 1700s) or may have been planted as late as the 1930's and 1940's. It is simply impossible to tell. The best we can do here would be to label these as "Dutch White" as it would be the best general estimation on our part. These 192 ecotypes were inter-mated and seedlings from the 12 ecotypes with the highest seed yielding ability were established as a half-sib progeny performance trial to determine their grazing persistence in grass swards. After 14 months of exposure to grazing with beef cattle, the 7 most vigorous appearing progeny genotypes from within each of the 12 half-sib families were then selected (e.g. among and within family selection) from this grazing persistence trial (84 total parental genotypes selected), inter-mated in field isolation in a replicated crossing block, and all seed from each genotype bulked to produce the pre-breeder's seed (Syn 1 generation). Breeder's seed (Syn 2 generation) was increased in isolation from the pre-breeder's seed.

'Durana' was stable and uniform through two generations of certified seed multiplication (e.g. breeder and foundation generations). There were no variants observed between the breeder and foundation generations for number of stolon growing points, plant spread (length and width), plant height, leaflet size (length and width), petiole length, heading date, number of seedheads per plant, and % cyanomorphic plants when tested at two locations in Georgia, Watkinsville and Eatonton (Tables 1 and 2). No off-types were recorded during these same evaluations.

**References**

Fick, G.W., and M.A. Luckow. 1991. What we need to know about scientific names: An example with white clover. J. Agron. Educ. 20:141-147.

**WHITE CLOVER**  
**'Durana'**

200300305

**18B. Statement of Distinctness**

'Durana' is most similar to 'Louisiana S-1' and 'Patriot'.

'Durana' differs from 'Louisiana S-1' in having more stolon growing points per unit area, a greater plant width and length, more seedheads per plant, a shorter plant height, a smaller leaflet, and a shorter petiole when tested at two locations in Georgia, Watkinsville and Eatonton (Tables 1 and 2).

Cluster analysis based on SSR markers also showed a distinct dendrogram grouping (Figure 1; from Jahufer et al. 2003) for 'Durana' (Gr 11) that differed completely from 'Louisiana S-1' (Gr 4).

'Durana' differs from 'Patriot' in having shorter individual plants, smaller leaflets, shorter petioles, an earlier heading date, and higher % of cyanomorphous plants when tested at two locations in Georgia, Watkinsville and Eatonton (Tables 1 and 2).

**Reference**

Jahufer, M.Z.Z., B.A. Barrett, A.G. Griffiths, and D.R. Woodfield. 2003. DNA fingerprinting and genetic relationships among white clover cultivars. *Proc. NZ Grassland Assoc.* 65:163-169).

UNITED STATES DEPARTMENT OF AGRICULTURE  
AGRICULTURAL MARKETING SERVICE

9/12/77

BELTSVILLE, MARYLAND 20705

Exhibit C OBJECTIVE DESCRIPTION OF VARIETY 'Durana'  
WHITE CLOVER  
(TRIFOLIUM Repens)

2003 00305

Place the appropriate number that describes the varietal character of this variety in the boxes below. Fill unused columns with zeroes (e.g. 

0	9	9
---	---	---

 when number is 99). In comparisons to standard varieties, the value 

0	0
---	---

 should only be used to indicate that the varieties are equal. The symbol ▲ indicates a decimal point. Characteristics described, including numerical measurements, should represent those which are typical for the variety. Measured data should be for spaced plants. Any recognized color fan, e.g. Royal Horticultural Colour Chart, may be used to determine plant colors; designate system used: Royal Horticultural. Give location of test area Georgia. Ranges of values are valuable and may be included with additional description elsewhere in the application.

NOTE: For single plant data a minimum of 100 plants is suggested.

1. TYPE:

2
---

 1=Small 2=Intermediate 3=Large (Ladino) 4=Other (specify)

STANDARD VARIETIES

1=Louisiana S-1 2=Regal 3=Pilgrim 4=Merit

2. MATURITY:

1	0	0
---	---	---

 % Plants flowering in seedling year

Time of flowering (50% of plants in bloom): (from spring growth in non-seedling Year)

6
0

 Days earlier than 

2
---

 standard variety  
Days later than 

1
---

 standard variety

3. GROWTH HABIT:

1
---

 1=Prostrate (Grasslands Huia) 2=Erect (Regal)

2
---

 1=Lax (Regal) 2=Dense (Grasslands Huia)

Plant Height (from soil level to top of flowering head at 50% flowering):

3
---

 cm tall 

2
---

 cm shorter than 

1
---

 standard variety  

2
---

 cm taller than 

1
---

 standard variety

Plant Width (average of 2 horizontal measurements of leaf spread at top of plant at 50% flowering of 2nd year):

1	3
---	---

 cm Wide 

2
---

 cm narrower than 

1
---

 standard variety  

3
---

 cm wider than 

1
---

 standard variety

4. LEAF (Central leaflet of 3rd leaf from tip of rapidly growing stolon - usually in summer months):

8	2
---	---

 % plants cyanophoric (Picric Acid Test)

9	6
---	---

 mm leaflet width

1	2
---	---

 mm leaflet length

1
---

 mm petiole width

2	9
---	---

 mm length petiole

1	7
---	---

 mm narrower than 

1
---

 standard variety  
mm wider than 

1
---

 standard variety  

2
---

 mm shorter than 

1
---

 standard variety  
mm longer than 

1
---

 standard variety  
mm narrower than 

1
---

 standard variety  
mm wider than 

1
---

 standard variety  

9
---

 mm shorter than 

1
---

 standard variety  
mm longer than 

1
---

 standard variety

4
---

 Color: 1=Light green (Regal) 2=Medium green (Merit)

3=Dark green (S-184)

4=Other (specify) 143A-Royal Hort. Colour Chart

200300305

WHITE LEAF MARKING (at 50% flowering): Note categories below allow for increasingly detailed description of the same data. Diagram illustrates terms:

1=Full V 2=Broken V 3=V-point  
4=Filled V 5=Double V



Presence of mark: of total plants, give percentage of marked and unmarked plants (total=100%)

% Absent

% Marked

Shape of mark: of total plants, give percentage having each shape (Total = % marked above).

% Full V

% Broken V

% V-point

% Filled V

% Double V

% Other (specify)

ANTHOCYANIC (Red) LEAF MARKING (Some leaves of plants examined should have developed at temperatures of 10° C or less): of total plants give percentage marked (red flecking, red midrib, or red leaf) and unmarked (Total = 100%)

% Absent

% Marked

5. STOLON: Give widest diameter of stolon at point of attachment of leaf measured above (3<sup>rd</sup> node from tip)

mm diameter

mm narrower than  standard variety  
  mm wider than  standard variety

6. FLOWERING HEAD (at 50% flowering of variety):

heads/plant

no. greater than  standard variety

no. fewer than  standard variety

7. DISEASE AND PEST RESISTANCE: (0=not tested, 1=susceptible, and 2=resistant). If variety is claimed to be resistant or to show intermediate reaction, substantiating test scores should be attached clearly identifying disease, application variety, check varieties, location of test, and range and direction of test scores.

#### A. STOLON AND ROOT ROTS

Fusarium spp  
 Rhizoctonia spp  
 Colletotrichum spp  
 Leptodiscus spp  
 Cervularia spp  
 Sclerotium rolfsii  
 Sclerotinia trifoliorum

#### B. VIRUSES

Alfalfa mosaic  
 White clover mosaic  
 Clover yellow mosaic  
 Clover yellow vein mosaic  
 Red clover vein mosaic  
 Peanut stunt  
 Other (specify) \_\_\_\_\_

#### C. NEMATODES

Root knot  
 Sting  
 Meadow  
 Clover cyst

#### D. INSECTS

Lygus bugs (Lygus spp)  
 Spider mites (Tetranychus spp)  
 Clover seed weevil (Miccotrogus picirostris)  
 Ladino clover seed midge (Dasineura gentneri)  
 Clover head weevil (Hypera meles)  
 Clover leaf weevil (H. punctata)  
 Lesser clover leaf weevil (H. uigrigensis)  
 Alfalfa weevil (H. postica)  
 Meadow spittlebugs (Philaenus spumarius)  
 Clover root curculio (Sitona hispidula)  
 Potato leafhopper (Empoasca fabae)  
 Other (specify) \_\_\_\_\_

200300305

8.

Indicate the variety most closely resembling the application variety for the following:

CHARACTER	VARIETY	CHARACTER	VARIETY
Leaflet shape	Louisiana S-1	Seed color	
Cutting recovery	Louisiana S-1	Late season growth	
Winter hardiness	Louisiana S-1	Persistence	

Brewbaker, J. L. and H. L. Carnahan. 1956. Leaf marking alleles in white clover. Uniform nomenclature. Journ. Heredity 47:103-104.

Hawkins, R. P. 1959. Botanical characters for the classification and identification of varieties of white clover. J. Nat. Inst. Agr. Bot. 8: 675-682.

I.S.T.A. (Herbage) Variety Committee, 1972. Draft paper on tests for identification and trueness to cultivar. Proc. Int. Seed Test. Assoc. 37:443-495.



**WHITE CLOVER**  
**'Durana'**

**18D. Additional Description of the Variety**

'Durana' is an intermediate type white clover, *Trifolium repens* L., intended for use as a renovation legume for grass pastures for livestock production in the southeastern USA (Bouton et al. 2005). It is a persistent, low growing, densely spreading, profuse flowering variety with a leaf color equivalent to green class 143A on the Royal Horticultural Society Colour Chart.

'Durana' was granted Plant Variety Rights in New Zealand on 4 March 2004 (No. 2184).

'Durana' is similar to 'Louisiana S-1' in heading date and % of cyanomorphous plants when tested at two locations in Georgia, Watkinsville and Eatonton (Tables 1 and 2).

Cluster analysis based on SSR markers also showed a distinct dendrogram (Figure 1; from Jahufer et al. 2003) grouping for 'Durana' (Gr 11) that differed from 'Grasslands Huia' (Gr 1), 'Grasslands Sustain' (Gr 3), and 'Regal' (Gr 7).

'Durana' differs from 'Regal' in having more stolon growing points per unit area, a shorter plant height, a smaller leaflet, a shorter petiole, an earlier heading date, a greater number of seedheads per plant, and a higher % of cyanomorphous plants when tested at two locations in Georgia, Watkinsville and Eatonton (Tables 1 and 2). 'Durana' demonstrated better pasture persistence and higher animal gains than 'Regal' in Georgia trials (Bouton et al. 2005).

'Durana' differs from 'Grasslands Huia' in having more stolon growing points per unit area, a shorter petiole, an earlier heading date, a greater number of seedheads per plant, and a higher % of cyanomorphous plants when tested at two locations in Georgia, Watkinsville and Eatonton (Tables 1 and 2).

'Durana' differs from 'Grasslands Sustain' in having more stolon growing points per unit area, a shorter (height) but wider plant (length and width), a smaller leaflet, a shorter petiole, an earlier heading date, a greater number of seedheads per plant, and a higher % of cyanomorphous plants when tested at two locations in Georgia, Watkinsville and Eatonton (Tables 1 and 2).

**References**

- Bouton, J.H., D.R. Woodfield, C.S. Hoveland, M.A. McCann, and J.R. Caradus. 2005. Enhanced survival and animal performance from ecotype derived white clover cultivars. *Crop Sci.* 45:1596-1602.
- Jahufer, M.Z.Z., B.A. Barrett, A.G. Griffiths, and D.R. Woodfield. 2003. DNA fingerprinting and genetic relationships among white clover cultivars. *Proc. NZ Grassland Assoc.* 65:163-169).

Table 1. Characteristics of two generations of 'Durana' white clover tested at Watkinsville, GA against six standard check varieties. Experimental design was randomized complete block design with 10 blocks. Each plot consisted of row of 12 plants spaced planted on 0.75 m centers.

Variety (Generation) <sup>†</sup>	Stolon		Plant		Leaflet		Leaf Petiole Length	Heading Date	Seedheads no. / plant	Cyanomorphic Plants <sup>§</sup> %
	Growing Points	no. / 0.1m <sup>2</sup>	Length	Width	Height	Length	Width			
				cm			mm	DOY <sup>‡</sup>		
Durana (BRD)	36.8	11.2	10.9	2.6	12.4	9.9	31.7	106.2	15.9	79.2
Durana (FTD)	36.6	10.2	10.7	2.5	11.6	10.0	32.6	105.9	14.8	84.6
Patriot (BRD)	33.6	11.8	12.4	4.6	14.7	11.6	44.0	109.1	14.6	49.0
Patriot (FTD)	33.6	11.0	11.5	4.6	14.3	11.2	44.3	108.5	16.3	49.1
Louisiana S-1	24.2	7.8	8.5	4.2	14.0	11.6	45.1	106.6	10.5	89.2
Huia	23.4	8.1	7.9	3.1	12.5	11.1	44.4	115.1	1.1	65.2
Sustain	21.6	8.9	9.2	4.4	14.2	12.1	49.5	111.3	3.9	69.1
Regal	19.0	11.6	12.8	8.5	19.5	14.9	68.9	112.9	16.9	8.3
LSD (p<0.05)	3.3	1.5	1.5	0.7	0.8	1.0	6.9	2.2	4.0	10.4

<sup>†</sup>BRD=Breeder seed generation; FTD=Foundation seed generation.

<sup>‡</sup>DOY=Day of year or average number of days from January 1.

<sup>§</sup>Analyzed via picric acid test using procedures from Corkill, L. 1940. Cyanogenesis in white clover (*Trifolium repens* L.). Cyanogenesis in single plants. New Zealand J. Sci. Tech. 22: 65-67B.

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9

Table 2. Characteristics of two seed increase generations of 'Durana' white clover tested at Eatonton, GA against six standard check varieties. Experimental design was randomized complete block design with 10 blocks. Each plot consisted of row of 12 plants spaced planted on 0.75 m centers.

Variety (Generation) <sup>†</sup>	Stolon Growing Points no. / 0.1m <sup>2</sup>	Plant			Leaflet		Leaf Petiole Length	Heading Date DOY <sup>‡</sup>	Seedheads no. / plant	Cyanomorphic Plants <sup>§</sup> %
		Length	Width	Height	Length	Width				
			cm			mm				
Durana (BRD)	37.9	14.9	14.9	3.6	12.5	9.1	26.8	103.9	41.9	83.6
Durana (FTD)	38.2	15.4	14.5	3.5	12.4	8.9	26.6	103.7	36.4	88.2
Patriot (BRD)	35.2	15.1	14.2	4.5	14.2	10.6	34.0	106.9	30.8	40.0
Patriot (FTD)	35.0	13.2	12.4	4.5	15.2	10.8	35.4	106.1	29.8	33.2
Louisiana S-1	27.1	12.8	10.9	5.1	14.2	10.4	39.7	104.3	23.4	77.2
Huia	21.3	10.7	12.9	4.1	13.5	10.6	38.8	112.9	3.0	63.8
Sustain	22.9	10.6	10.1	4.3	14.2	10.8	37.9	109.1	8.7	63.0
Regal	21.6	11.9	11.7	9.8	18.6	14.1	63.1	110.6	23.1	10.0
LSD (p<0.05)	3.8	2.5	2.3	0.8	1.5	1.0	7.2	2.1	6.2	19.5

<sup>†</sup>BRD=Breeder seed generation; FTD=Foundation seed generation.

<sup>‡</sup>DOY=Day of year or average number of days from January 1.

<sup>§</sup>Analyzed via picric acid test using procedures from Corkill, L. 1940. Cyanogenesis in white clover (*Trifolium repens* L.). Cyanogenesis in single plants. New Zealand J. Sci. Tech. 22: 65-67B.

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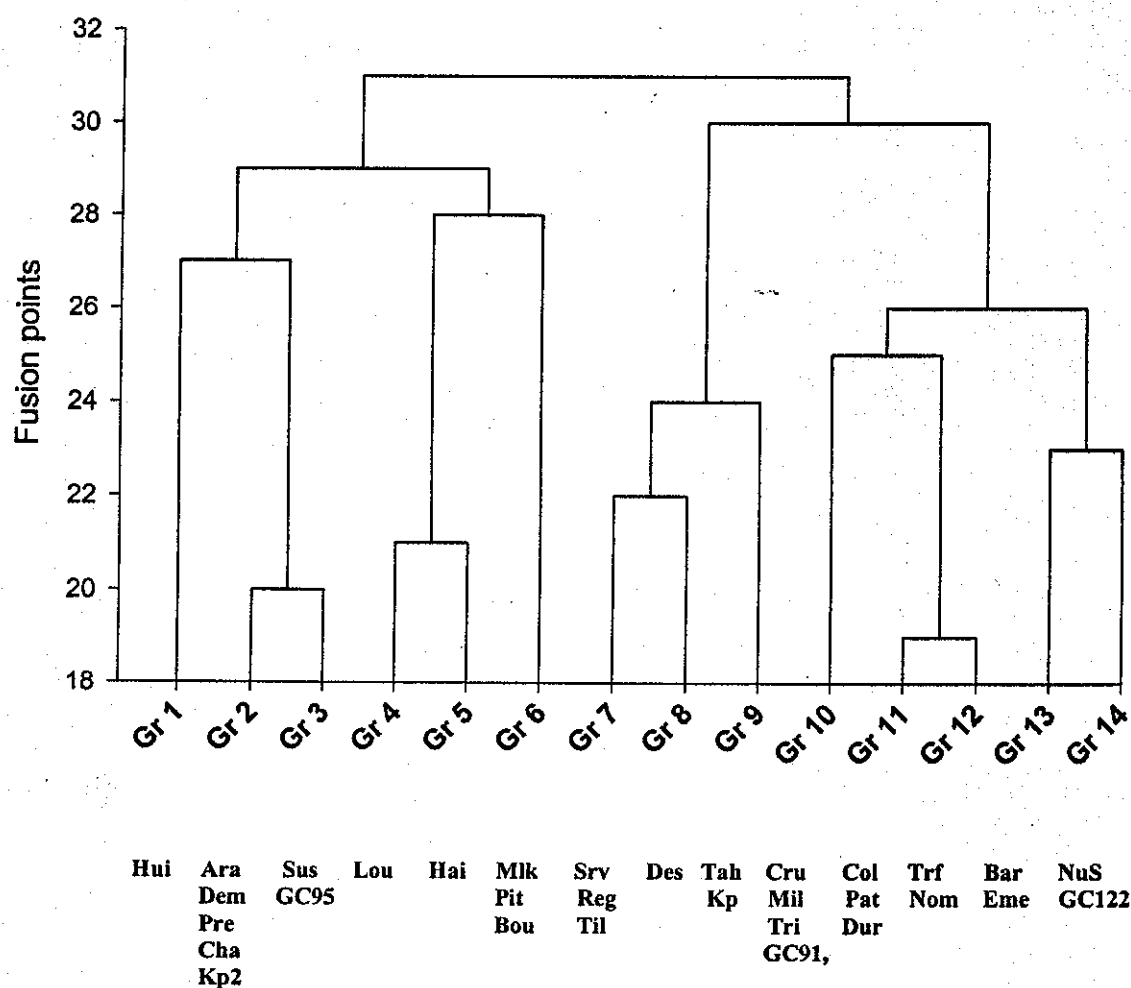


Figure 1. Dendrogram based on cluster analysis of cultivar by SSR marker matrix. Fusion points and cultivars (Hui, Huia; Ara, Aran; Pre, Prestige; Cha, Challenge; Kp2, Kopu 2; Dem, Demand; Sus, Sustain; GC95; Lou, Louisiana S1; Hai, Haifa; Mlk, Milkanova; Pit, Pitau; Bou, Bounty; Srv, SRVR; Reg, Regal; Til, Tillman 2; Des, Destiny; Tah, Tahora; Kp, Kopu; Cru, Crusader; Mil, Milton; Tri, Tribute; GC91; Col, Colt; Pat, Patriot; Dur, Durana; Trf, Triffid; Nom, Nomad; Bar, Barblanca; Eme, Emerald; NuS, NuSiral); GC122; at the 14 group (Gr) level, are shown.

U.S. DEPARTMENT OF AGRICULTURE  
AGRICULTURAL MARKETING SERVICE

Application is required in order to determine if a plant variety protection certificate is to be issued (7 U.S.C. 2421). The information is held confidential until the certificate is issued (7 U.S.C. 2426).

**EXHIBIT E  
STATEMENT OF THE BASIS OF OWNERSHIP**

## 1. NAME OF APPLICANT(S)

University of Georgia Research Foundation, Inc. (UGARF)  
and AgResearch Limited, New Zealand (AgRes)2. TEMPORARY DESIGNATION  
OR EXPERIMENTAL NUMBER

GA-43, GC90

## 3. VARIETY NAME

Durana

## 4. ADDRESS (Street and No., or R.F.D. No., City, State, and ZIP, and Country)

Room 630 Boyd Graduate Studies Bldg.  
University of Georgia  
Athens, GA 30602

## 5. TELEPHONE (Include area code)

706-542-5942

## 6. FAX (Include area code)

706-542-3837

## 7. PVPO NUMBER

2003 00305

8. Does the applicant own all rights to the variety? Mark an "X" in the appropriate block. If no, please explain.

☒ YES☐ NO

9. Is the applicant (individual or company) a U.S. national or a U.S. based company? If no, give name of country.

☒ YES☒ NO

UGARF

AgRes NZ

10. Is the applicant the original owner?

☒ YES☐ NOIf no, please answer one of the following:

a. If the original rights to variety were owned by individual(s), is (are) the original owner(s) a U.S. National(s)?

☐ YES☐ NO

If no, give name of country

b. If the original rights to variety were owned by a company(ies), is (are) the original owner(s) a U.S. based company?

☐ YES☐ NO

If no, give name of country

11. Additional explanation on ownership (Trace ownership from original breeder to current owner. Use the reverse for extra space if needed):

See Attached

**PLEASE NOTE:**

Plant variety protection can only be afforded to the owners (not licensees) who meet the following criteria:

1. If the rights to the variety are owned by the original breeder, that person must be a U.S. national, national of a UPOV member country, or national of a country which affords similar protection to nationals of the U.S. for the same genus and species.
2. If the rights to the variety are owned by the company which employed the original breeder(s), the company must be U.S. based, owned by nationals of a UPOV member country, or owned by nationals of a country which affords similar protection to nationals of the U.S. for the same genus and species.
3. If the applicant is an owner who is not the original owner, both the original owner and the applicant must meet one of the above criteria.

The original breeder/owner may be the individual or company who directed the final breeding. See Section 41(a)(2) of the Plant Variety Protection Act for definitions.

According to the Paperwork Reduction Act of 1995, an agency may not conduct or sponsor, and a person is not required to respond to a collection of information unless it displays a valid OMB control number. The valid OMB control number for this information collection is 0581-0055. The time required to complete this information collection is estimated to average 0.1 hour per response, including the time for reviewing the instructions, searching existing data sources, gathering and maintaining the data needed, and completing and reviewing the collection of information.

The U.S. Department of Agriculture (USDA) prohibits discrimination in all its programs and activities on the basis of race, color, national origin, gender, religion, age, disability, sexual orientation, marital or family status, political beliefs, parental status, or protected genetic information. (Not all prohibited bases apply to all programs.) Persons with disabilities who require alternative means for communication of program information (Braille, large print, audiotope, etc.) should contact USDA's TARGET Center at 202-720-2600 (voice and TDD).

To file a complaint of discrimination, write USDA, Director, Office of Civil Rights, Room 326-W, Whitten Building, 14th and Independence Avenue, SW, Washington, D.C. 20250-9410 or call (202) 720-5964 (voice and TDD). USDA is an equal opportunity provider and employer.

WHITE CLOVER  
'Durana'

2003 00305

18E. Statement of the Basis of the Owner's Ownership

The variety for which plant variety protection is hereby sought is owned jointly by the University of Georgia Research Foundation, Inc. (UGARF) and AgResearch Limited, a New Zealand Corporation (AgRes).

Ownership by UGARF is based on the Patent Policy approved by the Board of Regents of the University System of Georgia on June 9, 1982, in which the Board of Regents assigned to UGARF all rights in intellectual property developed or created by employees at the University of Georgia, one of the Universities of the University System of Georgia. Rights to novel plant varieties developed at the University of Georgia, including 'Durana' white clover, are covered by said Patent Policy. As an employee of the University of Georgia, Joseph H. Bouton, pursuant to said Patent Policy, has assigned his rights in 'Durana' to UGARF.

Dereck Woodfield is an employee of AgResearch, Ltd., New Zealand, and has assigned his rights in 'Durana' to AgRes.

200300305

**grasslanz™**  
unique plant opportunities

**Grasslanz Technology Ltd**

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New Zealand

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**Fax** +64 6 351 8240

**www.grasslanz.com**

3<sup>rd</sup> December 2004

The Commissioner  
Plant Variety Protection Office  
Agriculture Marketing Service  
Dept. of Agriculture  
Beltsville, Maryland 20705 - 2351

**Assignment of ownership in Plant Varieties Registered in the United States.**

Please find enclosed a Letter of Authority for the transfer of ownership of the plant varieties listed in the attached Schedule of Property to be Transferred.

Ownership has been transferred from \*AgResearch Limited to:

\*See Authority Letter

**Grasslanz Technology Limited, Private Bag 11008, Tennent drive, Fitzherbert West, Palmerston North, New Zealand.**

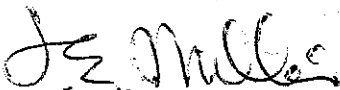
Would you please therefore amend your records to reflect these changes, and where relevant, note that Grasslanz Technology Limited is now also the maintainer of these varieties.

Please also note that in regard to those varieties registered in Joint Ownership only the AgResearch Limited interest is transferred to Grasslanz Technology Limited. The other partner details are unchanged.

Any costs incurred to Grasslanz Technology Limited for the requested actions will be paid on receipt of an invoice sent to the undersigned at the above address.

Thank you in anticipation.

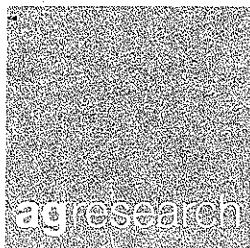
Yours sincerely



Jeff E. Miller  
Manager, Intellectual Property  
GRASSLANZ TECHNOLOGY LIMITED

Enc.

14



AgResearch Limited  
Grasslands Research Centre  
Tennent Drive, Private Bag 11008  
Palmerston North, New Zealand

Phone +64 6 356 8019  
Facsimile +64 6 351 8032  
www.agresearch.co.nz

200300305

20<sup>th</sup> October 2004

**TO WHOM IT MAY CONCERN:**

This document serves to give notice and authority for the transfer of ownership of the Intellectual Property described on the attached 'Schedule of Intellectual Property Currently Registered in the Name of \*AgResearch Limited to be Assigned'. ('The Schedule').

The ownership of the Intellectual Property so described in 'The Schedule' attached is transferred to:

**Grasslanz Technology Limited, Private Bag 11008, Tennent Drive, Fitzherbert West, Palmerston North, New Zealand.**

effective from 1<sup>st</sup> July 2004.

Grasslanz is an Incorporated Company (No. 1368159) under the New Zealand Companies Act 1993 and a wholly owned subsidiary company of AgResearch Limited.

*\*Previously The New Zealand Pastoral Agriculture Research Institute Limited and formerly Department of Scientific and Industrial Research (DSIR).*

Dated this 3<sup>rd</sup> day of November 2004

Signed [Signature]  
Director/Authorised Signatory for AgResearch Limited



**'Schedule of Intellectual Property Currently Registered in the Name  
of AgResearch Limited to be Assigned'**

(United States Plant Variety Protection Office )

Variety name/code	Grant/Application No.
Grasslands Egmont	8900219
Grasslands Puna	9000157
Grasslands Gala	9300233
Grasslands Tekapo	9400057
Grasslands Advance	9300283
Grasslands Demand	9600258
Grasslands Sustain	9600259
Tillman II	9800116
Dixon	200100129
Lakota	200100128
Grasslands Kopu II	200200014
Flecha	200300012
Durana (Joint Application)	200300305
Patriot (Joint Application)	200300304

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unique plant opportunities

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**Jeff Miller**  
Intellectual Property  
Manager